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Actinomycin D Influence on Biosynthesis of Extracellular Ribonucleases by Sporulating Bacteria

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Abstract

The influence of actinomycin D on the synthesis of extracellular ribonucleases by "Bacillus intermedius" (binase), B.pumilus (RNAse Bp) and B.amyloliquefaciens (barnase) was studied comparatively. When added during the active synthesis of the enzymes actinomycin D stimulated the biosynthesis of binase and RNAse Bp and had no influence on the barnase biosynthesis. The response of the bacillary RNAse biosynthesis to the added actinomycin D correlated with the differences in the nucleotide sequences of the genes encoding the enzymes. The Escherichia coli SURE recombinant strains carrying the plasmids with the genes of binase, RNAse Bp and barnase under different regulatory sequences, as well as the E.coli MC4100 recombinant strains carrying the plasmids with the β-galactosidase gene under the promoters of the bacillary RNAse were isolated. However, the expression of the bacillary ribonuclease genes in the E.coli recombinant strains carrying the plasmids with the genes of the enzymes, as well as the expression of the β-galactosidase gene from the promotors of the bacillary RNAses was not stimulated by actinomycin D irrespective of the dose and addition time.

Keywords

Actinomycin D, Escherichia coli SURE, Extracellular ribonucleases, RNAse genes